COST AND MANAGEMENT

PROFI

Design Cost Analysis . . .
A Guide for the Engineer
By James C. Stewart

The Analysis and Control
of Factory Labour Costs
By Herbert C. Geisler

Control of Costs
on the Shop Floor
By Allan Fogg

LOSS

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Cost and Management

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Herbert C. Geisler is Manager of Internal Audits for Landers, Frary and Clark of New Britain, Connecticut, and is devoting much of his time to the reduction and control of factory labour costs. He began his association with this firm in March 1951 as Chief Accountant. Previously he was associated with Price, Waterhouse and Company of New York, and prior to that, was Assistant Treasurer of Knapp Mills Inc. of New York City. He received his B.B.A. Degree in the evening division of Pace College and had an outstanding scholastic record in Accounting and Business Law.

A member of P.A. Management Consultants Limited of Toronto, Mr. Fogg graduated from Oxford University, and after service in the Royal Navy, entered industry. Subsequently, he became Management Consultant in England, and two years ago came to Canada to join an associate company of his English one.

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Editorial Comment . . .

UNIFORM TERMINOLOGY

The March 1955 issue of "The Journal of Accountancy" contains the official release of Accounting Terminology Bulletin Number 2 prepared by the Committee on Terminology of the American Institute of Accountants.

This bulletin deals with the terms Revenue, Income, Profit, and Earnings. The Committee expresses in the bulletin regret about the lack of uniformity found in practice which "is unfortunate and confusing."

The bulletin recommends that the term "Proceeds" be not ordinarily used as a caption in the principal financial statements; "Revenue" is described as a gross concept comprising the results from the sale of goods and the rendering of services including gains from the sale or exchange of assets (other than stock in trade), interest and dividends earned on investments, but excluding amounts received from loans, owners' investments, and collections of receivables. A wider use of the term in the described meaning is recommended.

The terms "Net Income" or "Net Profits" could describe the net result of all operations but before deducting dividends or comparable withdrawals. The Committee recommends that wherever "income" or "profit" is used in financial statements, an appropriate qualifying adjective should precede these terms.

Concerning the terms "Earnings", the Committee does not arrive at a definite suggestion but is merely "hopeful" that eventually one single term will be uniformly used "to designate the net results of business operations." The Committee went even so far as to making no recommendation for a preference between "Earnings" and "Net Income".

The terms dealt with by this terminology bulletin are equally applicable in Canada and we can only hope that the recommendations of the Committee be followed as widely as possible in Canada. It may be expected that the Canadian Institute of Chartered Accountants in its Accounting Terminology now in the stage of preparation will arrive at recommendations generally in line with those adopted by the American Institute of Accountants.

It is gratifying to see concerted efforts in the direction of making accounting statements more meaningful by eliminating ambiguity from the terminology used. As the editorial in the quoted issue of "The Journal of Accountancy" says, "the pronouncements of the committee on terminology are, of course, not mandatory." Nevertheless, the influence of this strong body of professional accountants will be felt as it will help the accountant looking for the right expression in making the correct choice between alternatives at his disposal.

Although this clarification of terminology is only in its beginning in the field of general accounting, it can be stated without exaggeration that in the field of cost accounting not even beginnings are noticeable. One has only to read one of the most recent textbooks, e.g., Matz, Curry and Frank's "Cost Accounting" in order to realize how indefinite the usage of terms in our chosen field still is. As witness the quote from the mentioned text:

"The differential cost concept is often named marginal cost or incremental cost."

And a little further in the text,

"The term marginal cost should not be confused with the newly created term "Marginal costing". This latter term connotes a costing procedure that disregards the allocation of fixed expenses to all units produced. It has more appropriately been termed "direct costing" . . . "

This is only an example chosen at random. It would not be difficult to present a whole string of ambiguous and confusing terms, particularly in the field of standard cost variances, or in the description of different standard costs, e.g., basic, ideal, bogey, etc.

The lack of uniformity in the use of cost terms detracts from the usefulness of cost statements for the layman, who has no chance of determining what meaning should be given to the term used, until a uniform terminology has been arrived at. It would appear therefore, that there is a need for the representative bodies of industrial accountants to assume the responsibility of clarifying cost terminology, which sometimes confuses even the expert.

PERSONALS

Mr. R. Forrest, R.I.A., has been appointed the President and General Manager of Edmonton Cold Storage Limited.

Mr. Claude F. Wilson, formerly of Atlas Steels Ltd., Welland, has recently taken up the duties of Accountant Office Manager for Scripto of Canada Limited in Toronto.

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Index to Modern Figuring by Marchant Methods . . . ☐

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MARCHANT CALCULATORS, LIMITED, TORONTO 2B, CANADA

C & M Round-Up . . .

By N. R. Barfoot, R.I.A.

50 Years Ago — **Labour Gazette**

The ten hour day was common although 9 hours was fairly prevalent in Ontario.

Bricklayers earned from $2.00 to $4.00 per day.

General industrial conditions were termed "exceptionally buoyant".

During December of 1904, 1,317 immigrants arrived from the British Isles. 1,289 from the United States, and 1,062 from other areas.

Seven industrial disputes were registered with the Department of Labour in January of 1905.

The lost time during the month due to such disputes was 2,775 working days.

During 1904 the conciliation services of the Department of Labour were requested on four occasions.

British Columbia — **Financial Post**

Here are some recent and interesting facts about this west coast Province:

1,869 new companies were formed in 1954, with an authorized capitalization of 117 millions.

A 55% post war population jump has helped create 150,000 new jobs—1954 population 1,266,000.

Value of mine production .156 millions, agriculture 145 millions, fish harvest at 72 millions, forests yielded 527 millions.

Capital expenditures in 1954 were 405 millions. 97 millions were spent on repairs and maintenance, and building construction amounted to 262 millions.

During 1954 B.C. exported 681 millions, and imported 340 millions of merchandise.

Power consumption has almost doubled from 2.8 billions K.W.H. in 1945 to 5.2 in 1955.

The economic biceps of B.C. are literally bulging.

Electronics in the Office — **Management Methods**

Here is what you should know about the use of electronics in your office:

It will take a company not less than 24 months to prepare itself for automatic data processing equipment. This does not include lead time for machine delivery.

Virtually any firm employing more than 100 clerical workers is ripe for some form of electronic data processing.

The price of electronic equipment is consistent with the ability to provide a proper rate of return; for example, a 1 million dollar computer system will pay for itself in four years, if it only replaces 50 employees.

Lower prices, special purpose machines are already in actual use. Newer equipment is coming out fast.

The fear of obsolescence need not deter you from purchasing present day equipment. Earlier computers are still in profitable operation.

Capital Investment—1955 **Financial Post**

As the year shapes up it now appears that 5,808 millions will be spent on construction machinery and equipment. This total was 5,498 millions in 1954 and 5,841 millions in 1953.

Here are the 1955 details:

Agriculture and fishing	395 millions
Forestry	41 millions
Mining oil, quarries	309 millions
Manufacturing	817 millions
Utilities	1,110 millions
Construction	48 millions
Housing	1,283 millions
Retail, wholesale	361 millions
Finance insurance, real estate	121 millions
Commercial services	108 millions
Institutional services	393 millions
Government	822 millions
Total construction 1955	4,064 millions
Total machinery and equipment	1,744 millions

Bank of Canada

Interesting facts from the annual report of the Bank of Canada for 1954 are:

Staff of the bank—729.

Total Canadian deposit liabilities in Chartered Banks, 9,481 millions.

Loan commitments on some 17,000 housing units (a new field) 160 millions.

Loans of all types declined by 11%.

Although industrial and instalment Finance Company loans declined sharply personal loans were up 43%.

Total general public holdings of currency, bank deposits, and Government of Canada securities was 18,864 millions, made up as follows:

Currency (notes and coin)	1,458 millions
Bank deposits	8,609 millions
Government of Canada securities	8,717 millions

During the year the Bank issued new bonds to the value of 3,400 million and retired 3,755 millions.

Net earnings of the Bank in 1954 after providing for contingencies and reserves were $51,877,399 compared to $47,592,807 the year before.

For Your Comfort **Financial Post**

Home owners in Canada will spend in the next ten years on comfort:

650 millions for heating and plumbing equipment for 1 million new homes.

300 millions for heating and plumbing in rural areas.

34 millions for new and modernized bathrooms.

15 millions for modernizing kitchens.

30 millions for new heating equipment.

210 millions for oil burners and controls.

Asbestos **Financial Post**

Did you know that in 1954:

966,900 tons were produced in Canada.

This tonnage was worth 93 millions.

90% of the mineral comes from Quebec.

60% of the world market is supplied by Canada.

95% of Canadian production was exported.

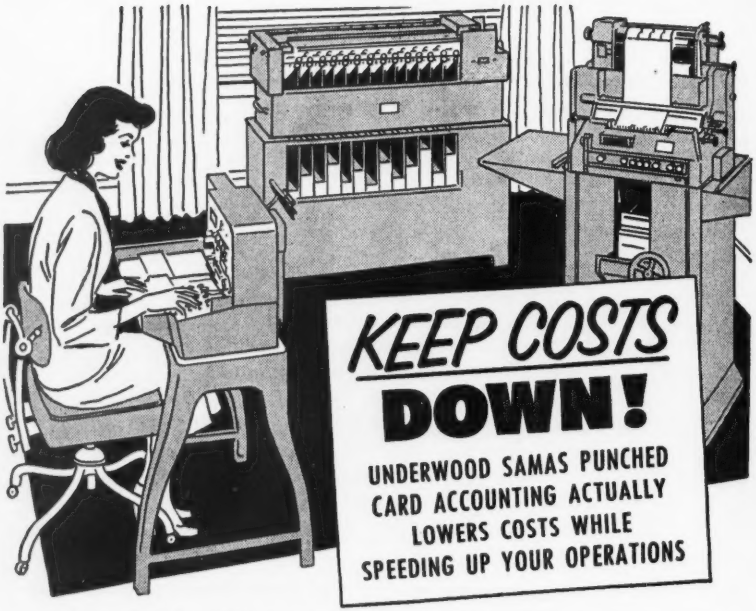
The United States is our biggest customer.

Nickel

Everyone knows that Canada is the prime producer of nickel, but did you know that:

Of 390 million pounds of nickel smelted by the free world in 1954, 320 million pounds, or 82.1% came from Canada.

275 million pounds were produced by one concern in the Sudbury area of Ontario.



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Books in Review . . .

"THE PRACTICE OF MANAGEMENT"

by Peter F. Drucker; published by Harper & Brothers Publishers, New York, 1954; p.p. 392 with selected bibliography and index; price $5.00.

Reviewed by GEORGE MOLLER, D.Jur., C.A., R.I.A., Hamilton

The author is Professor of Management in the Graduate School of Business at New York University; he acquired a wealth of experience in advising corporations on business policy and management. The undertitle of the volume, "A Study of the Most Important Function in American Society" links the new work with the author's earlier books "Concept of the Corporation" and "The New Society". Readers of professional and business magazines know the author from his articles in Dun's Review and Modern Industry, Harpers, and many others.

From an introductory chapter on "The Role of Management" pictured as the dynamic element in every business, Drucker embarks on a concise discussion of the jobs of management, claiming that "management is the least known and least understood of our basic institutions." In this chapter, the three parts of the book are defined as "Management's First Job is Managing a Business"; secondly, "Managing Managers"; and third, "Managing Worker and Work". From the very indicative titles of the chapters listed in the Contents, I pick the following ones in order to illustrate the main problems discused:

What is Our Business—And What Should It Be?
Today's Decisions for Tomorrow's Results
The Spirit of an Organization
Developing Managers
The Structure of Management
Employing the Whole Man
Human Organization for Peak Performance
The Manager of Tomorrow
Making Decisions

This enumeration is neither exhausting nor complete. Several chapters are devoted to case studies as, e.g., The Sears Story, The Ford Story, The I.B.M. Story—all very illuminating illustrations of the author's findings on actual developments.

I don't think it is exaggerated to state that anyone interested or active in management can go through this book without finding numerous statements which are applicable to his own position and situation.

The author endeavours to develop a new concept of the nature of the manager's job and its relation to the enterprise and to society.

In his dealings with the fallacy of the one-man chief executive, Drucker claims "that the chief executive be a team." He himself thinks that this statement will be considered rank fallacy but he proves that the most successful managements of the United States always organize the chief executive as a team. According to the author, the one-man executive is no longer capable of making decisions he is supposed to

make. Although there is usually still someone called a "chief executive officer", the job is actually discharged by a group working as a team. Drucker claims that every case of business growth "is an achievement of at least two, and often three, men working together." Successful small companies are commonly run by a two-man or three-man team (typically, the company's president and sales manager, and the treasurer), who together discharge the functions of "chief executive officer". This is a most interesting observation and will lead to much soul searching.

The author's explanation of the seeming contradiction in the trends to decentralization and centralized control is very elucidating. He defines "federal decentralization" as "organization by autonomous product business" and states that this form is fast becoming the norm for the larger company (Ford, Chrysler, General Motors, General Electric, Westinghouse, and also major chemical companies). In the chapter on "The Manager and His Work", Drucker states that the manager, in the first place, sets objectives; secondly, organizes; thirdly, motivates and communicates; fourthly, measures performance; and finally, develops people.

He comes to the conclusion that it does not require a genius, nor special talent, to be a manager. Being a manager is neither an art nor intuition.

INDUSTRIAL ACCOUNTANT'S HANDBOOK

Edited by Wyman P. Fiske and John A. Beckett; published by Prentice-Hall, Inc., New York, 1954; pp. 1041 and index; price $13.50 U.S.

Reviewed by GEORGE MOLLER, D.Jur., C.A., R.I.A., Hamilton

The preface to this handbook, which is the first one devoted directly to the industrial accountant's needs, states that it is the purpose of this book "to place before the American executive and those who assist him, a complete picture of the uses and limitations of accounting to increase his awareness of the value of business data and his understanding of the art of their use."

This volume, divided into twenty-five distinct articles written by contributors who are well known from their previous writings in the leading publications in the accounting and management field, covers not only strictly cost accounting problems and areas, but includes chapters on the Organization for Industrial Accounting as well as Control of Operations and Investment, Forecasting and Planning, in contrast to another chapter on Budgeting and Budgetary Control.

The mere listing of these chapter headings shows that the management accountancy field has been included in the scope of the volume.

In the first chapter, Basic Concepts in Industrial Accounting contributed by Professor Nickerson of Harvard University, industrial accounting is defined as an area of accounting that "involves the predetermination, accumulation, recording, allocation, reporting analysis, and interpretation of manufacturing costs, administrative costs, and

distribution costs." Its aspects are designed to meet some need in the conduct of business. It is concerned with the dynamics of business.

Although it may be unfair to the excellent contributions and contributors on general areas of cost accounting like the chapter on Cost Systems or Standard Costs in the Accounts, this reviewer wants to mention certain chapters in the volume which cover areas of more recent significant developments, specifically: The chapter on Machines for Accounting provides a listing of the factors in selection of equipment, a description of the functional application of equipment supported by a table on "Some Machine Applications By Types of Work Involved".

A chapter on Form Design and Control with a table on "Alternative Methods of Reproduction" provides valuable information for the industrial accountant who has no systems manager in his organization to whom to refer form problems.

It is very encouraging to see that the scope of the industrial accountant's interest includes forecasting general business conditions, a field usually considered the exclusive preserve of the economist, although extremely important in the integration of the accountant's work and in the over-all planning of top management. The chapter on Forecasting and Planning is contributed by Frank D. Newbury, Assistant Secretary of Defence, and formerly Vice-President of the Westinghouse Electric Corporation.

The father of LIFO, Maurice E. Peloubet, contributed a chapter on "Inventory Values and Profit Measurement", presenting very interesting tables on the computation of LIFO retail inventory valuations. Peloubet says in the chapter that "it is obvious that one must decide on the relative importance of the balance sheet and the profit and loss statement before deciding on an inventory method . . . It is a comparatively simple task to adjust the balance sheet by the use of reserves, whereas it is difficult, if not impossible, to adjust the cost of goods sold satisfactorily." Tables on "Comparison of Various Inventory Methods in a Rising and Falling Market" are excellent illustrations of the problems under review. Even hedging is concisely explained.

One of the editors, Wyman P. Fiske, a management consultant from New York, wrote the chapter on Control of Operations and Investment. In the discussion of the analysis of cost variances, reference is made to a preliminary draft of N.A.C.A. Variance Analysis Research Report showing that the volume is really up to date on the most recent publications in the accounting field.

The high level of the new handbook is proven by the inclusion of a chapter on Pricing Policies contributed by the acknowledged authority in this field, Joel Dean, management consultant from New York, who teaches in the Graduate School of Business of Columbia University. Dean's contributions are well known from such leading magazines like The Harvard Business Review. Costs do not necessarily determine prices. Dean states that "in most situations the cost plus pricing method

is not the best attack on the pricing problem" because it ignores demand, fails to adequately reflect competition; current full cost depends on the price charged; "normal" full cost is also affected by the price of the product and product costs cannot usually be precisely determined because of the arbitrary nature of allocation of common costs in a multiple product firm. In the reviewer's opinion, no management accountant can read this chapter without improving his insight into the complex relationships which govern pricing.

Internal check and audit are also covered in a chapter contributed by John B. Thurston, a founder and first President of the Institute of Internal Auditors. It is helpful to find in this chapter a full discussion of the "internal check" principle, usually only discussed in special works for auditors or on auditing.

It will take considerable time before a similar publication will surpass this one but the time will come when the industrial accountant will look for a book, the index of which will contain the reference terms of "Integrated Data Processing" or "Operations Research", which is not the case with the index of the handbook reviewed.

Design Cost Analysis— A Guide for the Engineer . . .

By James C. Stewart,
Chief Cost Analyst,
John Deere Waterloo Tractor Works, Waterloo, Iowa.

This is a procedural article describing the method by which the engineer and cost analyst work together to build up estimated costs of new designs. This is done by using cost information to select the most economical design, and to determine if the potential profits will justify the development and investment costs.

THE problem of a designing engineer is to create a product for which there is a demand, and one which can be produced at a cost that will permit the sale of the product at a price consumers are willing to pay. The engineer must not only provide a design which functions properly, but he must be constantly on the alert to use the designs which are most economical to manufacture.

Accurately prepared cost information made available to the engineer as promptly as possible, is the goal of our cost analysis group. This information provides the engineer with a comparison of the cost of his proposal, and the item it is to replace, or the closest comparable item being manufactured or both. The information is prepared by persons expert in certain fields who spend their entire time reviewing design proposals. It is prepared by individual parts and by groups of parts which represent an entire change or section of a change. This early presentation of cost data to the engineer permits prompt replacing of costly items with lower priced ones, and the revision of related parts where necessary to incorporate these changes.

The engineer receives not only cost information but recommendations for modifications which will simplify manufacture. The earlier needed changes are noted, the more simple it is to incorporate them in experimental models and production tooling.

In addition to aid given the engineer, the management is able to know what its cost will be before they give their approval to a project. This, plus data from the sales department on anticipated sales and market price, gives to management the best of information on which to base their decisions. All the way from the individual engineer to the top members of management, adequate, accurate cost information pays big dividends when it is provided before equipment is purchased and manufacture started.

Securing Information for Analysis

Regardless of the scope of the project to be worked on, the procedure followed is similar in its steps. The design is prepared by the engineer with the aid of draftsmen and specification clerks, and presented to the cost analysts who, in turn, review it and decide what procedure will be used to secure the cost of each item.

At this time the specifications of the proposed change are reviewed to see that they are complete and that the costs, when compiled, will present the comparison that is desired. Frequently, an engineer will have in mind what he wants, but does not express himself properly to secure it, or, because of his relatively infrequent use of costs, he will be unaware of things which may enter to distort an answer. For example, he may ask to have the cost of a design compiled, expecting to compare it with another cost prepared at a different time. He may not realize that, in the older cost, it was planned to use equipment which has since been discarded, or quotations which have become obsolete, or which may include parts not related to the current proposal. After this review of the proposal, forms are then set up to secure quotations on items to be purchased, and estimates of costs to produce the individual parts, both in the grey iron foundry and the machine shop.

If the design proposal has reached the stage where the Purchasing Department may be called upon to buy the part in the near future, quotations are secured through the Purchasing Department on major items and on all parts. In addition to providing the most accurate possible cost, the Purchasing Department is able to determine in advance of the time they must place orders, which supplier will be the most economical one to buy from. If this information were not available, in many instances orders would have to be placed and supplier's equipment purchased, in order to meet production deadlines without the benefit of knowing who would quote the lowest price. More important than this from the engineer's standpoint, are the comments received from the suppliers which may give information such as that the proposed material cannot be secured, that certain tolerances cannot be held except at extra cost, or that an almost identical part is standard whereas our part would be special and, as such, would carry a much higher price.

Upon receipt by the Foundry of a request for cost, the blueprint of the proposed part is reviewed by a pattern layout specialist. He notes how the part would be made, where the parting line would be, where cores would be necessary, what, if any, existing equipment could be used, whether the part should be molded in green sand, or in dry sand cores, or a combination. From this come three things—(1) the type and cost of equipment to be used, (2) recommendations for modifications to simplify foundry operations or reduce equipment cost and (3) a complete pattern layout from which to order equipment when the design is approved.

From this equipment and process lineup, another estimator then compiles the cost of that particular individual casting as shown in Exhibit I, based on costs for similar parts. He also provides a comparable cost of the part to be replaced. Both he and the layout man work constantly with men in the operating departments of the foundry, and consult with them on features which are so special as to require the advice of an expert pattern maker, core maker or molder.

FOUNDRY INDIVIDUAL CASTING COST

Part No. K 80 (Present) XK 90 (Proposed) * Name Front Wheel Hub Date 5-5-54

Castings per Mold: 2 / 2 — Type of Equipment: Number 2 unit / Number 2 unit — Material JDM 200 — Foundry Spec Cost per 100 pieces

METAL AND MELTING COST

Rough Casting Weight	18.00 16.00	lb. ÷	Gates & Sprue per Casting	4.00 4.00	lb. =	Iron per Casting	22.00 20.00				
÷ Fdry Scrap	4 5	% =	Gross Wt. Iron per Casting	22.88 21.00	lb. x	Melting Cost per 100 lbs.	$ 1.00	=		22.88 21.00	*
Rough Casting Weight	18.00 16.00	lb. x	Metal Cost per 100 lb.	$ 3.00	=					54.00 48.00	*

CORE MATERIAL COST

Core Wt. per Casting	4.00	lb. ÷	Total Scrap	10	% =	Gross Core Wt. per Casting	4.40		
(Core Dept. Scrap	5	% ÷	Foundry Scrap	4 5	%)				
Gross Core Wt. per Casting	4.40	lb. x	Core Material Cost per 100 lb.	$0.50	=				2.20 *

LABOUR AND OVERHEAD COST

Description	Labour per 100 Castings	Add % for Scrap	Total Production Labour 100 Castings	Overhead %	
Core Making	1.95	10	2.15	500	12.90 *
Molding	17.10 19.00	4 5	17.78 19.95	300 300	71.12 79.80 *
Milling	2.00 2.00	4 5	2.08 2.10	200 200	6.24 6.30 *
Chipping and Grinding	2.93 2.93	4 5	3.05 3.08	250 250	10.68 10.78 *
	Note: Decrease in diameter of hub section reduces weight and reduces diameter of center core so that green sand is no longer satisfactory for it and separate dry sand core must be used. Molding increased to cover cost of setting core. Scrap increased because of core.				
Total cost per 100 Good Castings	÷ Rough Casting Weight =	Cost per 100 lb.	$ 9.17 $11.31 *	Total Cost per 100 Good Castings	$164.92 $180.98 *

EXHIBIT I

Machining operations and equipment are provided by a crew of Methods estimating engineers who are familiar with machine shop operation and tool design. These men, like those in the foundry, constantly consult the foremen who will supervise the making of the part, tool designers, and manufacturers of equipment to be used to make the part, on features which are unusual or may appear to present a problem. Because of the extreme variety of problems which arise, one of the most important qualifications for these men is to know whom to consult. Within the estimating group, some specialization is followed: one man handling mostly sheet metal parts, another gear finishing, another assembly problems, and so on.

From the work of these Methods estimators comes a line up showing the machine to be used for each operation in making the part, the operation description, the labour cost and the tooling needed. This information is compiled on a Unit Part Cost Record on which is later summarized all the data relative to that part, as shown in Exhibit II. These descriptions and labour prices provide the basis for establishing the operation price and routing card used by the factory and cost departments when the part goes into production. Machine capacity records are also compiled from this information, and orders for equipment are placed from the list showing what will be needed.

In addition to these two groups of estimators, the parts are reviewed by engineers who specialize in such fields as materials, processing and standards, and by a representative of the Metallurgical Department. The metallurgist makes recommendations to the engineer and provides heat treatment instructions showing the type of furnace to be used, and the manner in which the parts are to be loaded into the furnace. This forms the basis for the Methods engineers to estimate heat treating costs. Suggestions for changes from these men and from the machine shop and foundry men, are conveyed directly to the designing engineer so that he can start redesigning. A copy of the suggestion remains with the cost data. These suggestions are a major factor in educating designers as to the most practical designs.

Analyzing and Summarizing Cost Data

Upon the return to the cost analyst of quotations from the purchasing department and estimates from the foundry and machine shop, comparisons are made with the cost of parts which are being replaced or are being used for reference. The use of a current part to provide a comparison is most essential, for the engineer cannot hope to recognize whether a cost is favorable or not without a yardstick to measure by. Glaring differences might show up by themselves, but most items warranting attention show up only by comparison.

Previous to this time, the cost analyst has concerned himself only with seeing that the proper items were being compared to give a correct answer. In taking the costs provided by the other departments and

Date 5-4-54 — UNIT PART COST RECORD — File 39

			Name of Part	Size	Material	Purch
	Pres.	K80	Front Wheel Hub	18.00 lb.	JDM 200 Cast Iron	No
	Prop.	XK90	Front Wheel Hub	16.00 Lb.	JDM 200 Cast Iron	No

		Material Cost Per 100 lb.	Weight of Each	Mat. Cost Per 100 Pcs. Less Freight	Freight Per 100 Pieces	Mat. Cost Per 100 Pieces Delivered	Date Quotations Req'd	Date Quotations Rec'd	Based on Lots Of	Supplier's Equipment / Our Foundry Equipment	Cost
	Pres.	9.17	18.00			164.92				1 Pattern -2 in a mold	500.00
	Prop.	11.31	16.00			180.98				1 Core box - Center Core	400.00
										50 Core Driers	200.00

Machine	Operation No. Pres.	Operation No. Prop.	Name of Operation	Labour per 100 Pcs. Pres.	Labour per 100 Pcs. Prop.	Out Shop Equipment	Cost
3186	10	10	Bore, ream, and face hub	4.00	3.50	*Use K800 Holding Fixture	
New Lathe	20	20	Turn and face flange	1.75	1.90	**New arbor and Tool setup	400.00
	30		Drill (6) 29/64 Flange holes	2.00			
146		30	Drill (6) 25/64 Flange holes		2.00	Alter Drill Fixture (New Spud and Bushing)	150.00
3715	40	40	Tap	1.20	1.20	Alter Tapping Fixture (New Spud)	75.00
	50	50	Wash and blowcut	.25	.25		
	60	60	Brush paint (replacement parts only)	(1.00)	(1.00)	Relation Gage (Flange Holes)	125.00
						Thread Plug Gages	70.00
						Dial Bore Gage	115.00
						Master Ring for Dial Bore	65.00
			*Smaller diameter bore permits faster turning speeds.				
			**Smaller diameter hub section leaves more flange to be turned. No more lathe time available so new lathe must be purchased.			Total Foundry Equipment	1100.00
						Total tools	625.00
						Total Gages	375.00
						Total Machines	12000.00
TOTALS				9.20	8.85		

New Turning Lathe
(Opr. 20) $12,000.00

EXHIBIT II

summarizing them, a step by step analysis is made between the proposed part and the one which it replaces. This necessitates comparing blueprints and noting differences in design, then checking to see that these are reflected in the costs given. Whenever it appears that the cost is substantially different from that justified by the change in the design, it is investigated and the results noted so that all who have occasion to review the cost can benefit from the investigation.

If it is found that the estimator or supplier made an error, the error is corrected. If it is found that some unusual feature in design caused the departure from what was expected, that is noted. If it causes an increase in cost, an attempt is made to eliminate the feature. Such an item might be the shifting of a drilled hole a slight distance in the proposed design so that it is so close to another hole that one would have to be drilled separately for they could no longer both be drilled at the same time on a multiple drill. If the space between the holes could be increased, they could both still be secured in the multiple drill.

If a savings results, an attempt is made to carry out the cost savings point into the design of similar parts. An example of this is the savings in drilling a long small hole, where machine speeds could be increased and tool sharpening delay reduced by using a slightly larger drill for the first half of the hole than on the second half, thereby cutting the friction between the shank of the drill and the inside of the hole, and permitting faster drill speeds.

It may also be found that an adjustment needs to be made in the present prices to provide comparable costs between the designs. Examples of this are: (1) A quotation which might incorporate a new steel cost which the forger had not yet had an opportunity to incorporate in his old price. During certain periods of government control, prices of present parts are frozen, while the supplier is at liberty to base new quotations on actual costs. (2) The foundry or machine shop might be switching processes, and set the proposed part up to make it the new way. The present part would be made the same way when the process goes into effect, but is still being made the old way. (3) A change might have been made on the present part but not be effective in manufacturing yet, so records of present costs still show the old part.

After the costs are completed on the individual parts, they are summarized on a Composite Cost Sheet as shown in Exhibit III if a change in cost is encountered on more than one part. This summary may cover the entire change or, in the case of an involved design change, a portion of the change only. This summary shows the total of the entire change, and permits easy locating of the factors making up the total.

A standardized procedure is used wherever practical to compile the cost data, working from detailed operation costs and quotations up to complete costs of individual parts, then to costs of a group of parts, and

COMPOSITE COST SHEET

File 39 Covering Model A Front Wheel — Date 5-6-54

Part Name	Pres. Part No.	Quan. Used	Prop. Part No.	Quan. Used	Cost per 100 Tractors: Present Q	Present Matl.	Present Labour	Proposed Q	Proposed Matl.	Proposed Labour	Equipment: Supp.	Fdry.	Mach.	Tools	Gages	Total
Front Wheel with Tire and Bearings	AK 5	2	XAK 8	2	2	-	8.00	2	-	8.00						
Front Wheel with Bearings	AK 6	1	XAK 9	1	2	Paint 6.00	24.00	2	Paint 6.00	30.00				150.00		150.00
Front Wheel	K 79	1	XK 89	1	2	400.00	-	2	400.00	-	50.00					50.00
Front Wheel Hub	K 80	1	XK 90	1	2	329.84	18.40	2	361.96	17.70		1100.00	1200.00	625.00	375.00	14100.00
Front Wheel to Hub Screw	K 81	6			12	30.00	-									
Front Wheel to Hub Stud			XK 91	6				12	15.00	12.00				275.00	50.00	325.00
Front Wheel to Hub Stud Nut			XK 92	6				12	24.00	-						
Front Wheel Bearing (Inner)	K 82	1	XK 93	1	2	150.00	-	2	130.00	-						
Front Wheel Bearing (Outer)	K 83	1	XK 94	1	2	160.00	-	2	140.00	-						
Tire and Tube 6.00 x 16 6 Ply	K 84	1	K 84	1	2	No Change		2	No Change							
Total						1075.84	50.40		1076.96	67.70	50.00	1100.00	1200.00	1050.00	425.00	14625.00
									1075.84	50.40						
						Increase			1.12	17.30						

EXHIBIT III

finally in some cases to an entire tractor. The use of the same procedures by the estimators and cost analysts make it possible for any engineer or executive to review any cost detail with a minimum of lost time. Making it possible for all engineering personnel to find their way through any cost summary is desirable because frequently, there is an overlapping of projects between different men, or it becomes necessary for another engineer to take over a project, or perhaps an executive finds it desirable to investigate the report given on a group of parts, and seek out the reason for an increase in cost or for the need to purchase some item of equipment.

Types of Costs Prepared

Three major types of costs are prepared. The most common of these is the one prepared at the time a Decision is being proposed to approve a change for production. Most of these involve only one or a few parts, but occasionally they involve several hundred. In addition to providing the engineer with data, the decision cost provides management with their basis for final approval before money is spent for equipment, and provides a basis to set selling prices in the case of a new item or adjusting them in the case of a change. This cost is polished off so to speak by seeing that all questions raised by the manufacturing departments are answered and that we and our potential suppliers are in agreement as to how the part is to be made. Frequently this same design change in an earlier stage was covered by a cost comparison or a tractor group cost.

Another type of cost is the comparison between two or more parts or groups of parts. These cost comparisons are made (1) to select the most economical design from a group of proposals, (2) to determine if a change is economically feasible, and (3) to decide if a project is worthy of the cost to develop and test it.

A third type of cost is the tractor functional group cost, in which the tractor is divided into groups based on the function served on the tractor, and these are further subdivided into sub-groups as shown in Exhibit IV. This plan is used in working with a new tractor, or a major revision of a current one. This type of cost permits an overall analysis of a tractor by the engineer in a relatively short time, by showing that certain sections of the tractor are the ones requiring his attention from a cost standpoint. This type of analysis can also be used on a number of current tractors to show which groups of each model appear out of line with the others, and therefore warrant the initiation of cost reduction study.

TRACTOR FUNCTIONAL GROUP CLASSIFICATION

- I Rear Wheels
- II Rear Axle, Brakes & Drawbar
  - A Rear Axle Housing
  - B Rear Axle, Brg. & Final Drive
  - C Brakes
  - D Drawbar
- III Transmission
  - A Transmission Case & First Reduction Gear Cover
  - B Differential
  - C Transmission Gears, Shafts, Brgs.
  - D Driving Means for PTO or PC
  - E Gear Shift
  - F Belt Pulley
  - G Clutch
  - H Transmission Oiling System
- IV Engine
  - A Crankshaft, Brg. & Flywheel
  - B Camshaft and Valve Actuating Means
  - C Connecting Rods & Pistons
  - D Cylinder, Cylinder Head & Valves
  - E Carburetion System
  - F Governor
  - G Engine Oiling System
  - H Ventilating System
  - J Exhaust System
  - K Ignition System
  - L Crankcase
  - M Fuel Injection System
  - N Air Intake System
  - O Driving Means for PTO or PC
- V Engine Cooling System
  - A Radiator, Water Pump and Water Piping
  - B Fan, Fan Shroud & Fan Drive
  - C Radiator Shutter
- VI Fuel System
  - A Fuel Tank and Fittings
  - B Fuel Filter
  - C Fuel Transfer Pump
- VII Frame, Pedestal and Front Axle
- VIII Front Wheels and Bearings
- IX Steering
- X Seat, Platform & Exterior Sheet Metal Parts
  - A Seat and Platform
  - B Fenders
  - C Hood, Grille & Cowl
  - D Tool Box
- XI Starting Engine
  - A Crankshaft, Brg. & Flywheel SE
  - B Camshaft & Valve Act Means SE
  - C Connecting Rods & Pistons SE
  - D Cylinder, Cyl. Head & Vales SE
  - E Carburetor SE
  - F Governor SE
  - G Oiling System SE
  - H Ventilating System SE
  - J Exhaust System SE
  - K Ignition System SE
  - L Crankcase SE
  - M Air Intake System SE
  - N Fuel System SE
  - O Starting System SE
  - P Transmission SE
  - R Gear Shift SE
  - S Clutch SE
  - T Assembly and Test SE
  - U Engine Cooling System SE
- XII Power Control & Power Take Off
  - A Transmission Driven PTO
  - B Power Lift
  - C Power Control
  - D Remote Cylinder & Oil Lines
  - E Direct Engine Driven PTO
- XIII Miscellaneous
  - A Line Assembly
  - B Final Test
  - C Paint
  - D Grease and Oil
  - E Tools
- XIV Shipping
  - A Domestic
  - B Export
  - C Packaging of Replacement Parts
- XV Implement Attaching Means
- XVI Electrical System
  - A Battery, Generator & Ammeter
  - B Lighting System
  - C Electric Starting System
- XVII Special Equipment
  - A Fenders
  - B Starting and Lighting
  - C Steering Brakes
  - D Wheel Scrapers
  - E Rice Field Equipment
  - F Radiator Shutter
  - G Front Wheel Load Equalizer
  - H Hour Meter
  - J Cab
  - K Engine Shields
  - L Auxiliary Hydraulic Valve
  - M LP Gas Equipment
  - N Muffler and Tail Pipe

EXHIBIT IV

In the event that a group cost is desired on a new model tractor, the cost analysts receive copies of orders sent to the experimental shop to make experimental parts, and use these orders for securing the costs of making the parts on a production basis. As rapidly as the individual costs are completed by the cost analysts, they are given to the engineer so that he may see how the part compares with the one it replaces, and if necessary, make design changes at once in order that the experimental parts tested will conform to those to be used in production. These individual costs are then returned to the cost analysts to be used in building up a summary of a group of the tractor. The summary of each group permits the engineering management to review the economics of the design almost as rapidly as it is designed, and helps them follow through on the total program and go quickly to the aid of the engineer where the cost indicates the need for action. A number of the first groups are frequently summarized before detailed design work has been started on the last of the tractor. This not only means securing an answer sooner but distributes the work more evenly.

Throughout the tractor are a number of parts which are much more costly than they need to be because something has been added to them to permit them to serve some other function also. For example, much of the machining of a belt pulley casting is done because it also serves as a housing for the clutch, a mounting for certain clutch parts, and as one of the clutch faces. To adjust for these parts which serve more than one purpose, their cost is split among the various groups and a portion of it included in the summary of each of the functional groups involved. This eliminates the possibility of a group of a proposed tractor appearing more economical than on the old tractor just because a portion of it was incorporated in a part in another group of the tractor.

When all the groups are completed and a summary made of the entire tractor, the engineering department is then in a position to secure from the management their go ahead to start approving the tractor for production. Management approval of a project is much easier to secure when they can be given production and equipment costs which they know have been accurately determined and studied by the engineer throughout his entire project.

The basis for our cost program's existence is the recognition that the most satisfactory product can be designed only if the engineer has accurate detailed cost information at his fingertips. It is considered that best results can be obtained by letting the engineer concentrate on the design with the aid of specialized help to review his work, to determine its practicability from a cost and production standpoint.

BOOKS FOR FURTHER READING

A CASE STUDY IN COSTING—ENGINEERING INDUSTRY, The Cost Accountant, March 1953.

THE ENGINEER GOES INTO MANAGEMENT, W. B. Given, Jr., Harvard Business Review, Jan.-Feb., 1955.

The Analysis and Control of Factory Labour Costs . . .

By Herbert C. Giesler,
Manager, Internal Audits, Landers, Frary & Clark, New Britain, Conn.

This article specifies the problems to be met in the analysis and control of factory labour costs when piece rate incentives and standard costs are employed. Attention is given to the conditions which create variances from standards; the necessity of controlling rework operations, and the analysis and control tools which may be used when coping with such problems.

INDUSTRIAL accountants are again in strong demand by the manufacturers of our nation. For the past several years, the prime activity of every company was to produce, produce and produce the items demanded by its customers, a demand which resulted from the diversion of productive facilities from war and defence purposes. These demands are now fulfilled to a large extent, and the need for competitive selling is again creeping into our economy. During the period of short supply which we have experienced, the cost of manufacturing finished goods was unfortunately a secondary consideration. Marginal producers flourished, laxities were tolerated, and inefficiencies spread to the degree that they have become almost a way of life. Now the industrial accountant is needed for his analytical abilities to help management in its important task to not only halt these wastes, but to reverse the trend and effectuate cost reductions.

The cost of labour is by far the most fertile field for cost reduction. While cost reduction is not the prime purpose of this paper, reference to and examples of effective reductions will be outlined. The prime purpose of this manuscript is to present the problems encountered in the analysis and control of factory labour costs wherever piece rate incentives and standard costs are employed. It is not possible to cover other wage rate systems as such, but many of the problems discussed are also pertinent to other pay systems.

Establishing the Standard Labour Rate

In any large corporation where a multiple product line is manufactured, there are thousands of labour operations performed in the conversion, fabricating and finishing of the end product. To establish the standard labour cost required to complete just one of these products involves considerable study, coupled with a predetermined method for the manufacture of parts, minor and major sub-assemblies and, of course, the final assembly of the various components. Further complications arise when labour costs are incurred on piece rate incentives requiring a specified grade of labour to perform the necessary operation. How then, under such a complex and intricate system of manufacture, does the accountant compare the actual labour input with the standards which our estimators have predetermined?

To answer this apparently simple question, let us first analyze the conditions which create variances from standards under a piece rate incentive system:

1. As to Materials:
   A. Substitute stock, a factor which not only creates a material price and usage variance, but also a change in labour price.
   B. Poor stock, a factor which gives rise to rework, extra labour operations and excessive spoilage.
2. As to Manufacturing Methods:
   A. Technological changes which give rise to changes in output. This factor requires careful analysis and occurs in those instances where the original method was performed under a piece rate which included an element of waiting time, idle time or machine cycle time. For example, when a time study is made on a particular operation and includes a twenty minute machine cycle factor, the single rate which has been set by time study is, in fact, a combination rate: one rate for actual performance and an additional rate for the waiting time.

      If the technological improvement eliminates the machine cycle time, then the output is increased, but, this increased output is possible because the waiting time element is eliminated. Here, the rate per unit should be reduced to prevent the compounding of the waiting time factor included in the original rate. While it is true that no labour price variance results from such a change of method, there is on the other hand, no benefit of cost reduction accruing to the company unless a rate change is effected.

   B. Changes in Methods:

      Changes in Methods are to be distinguished from technological improvements in that they incorporate such changes as flow of work, changes in machine cycles, speeds and feeds, conditions under which operations are performed, and changes in the materials or supplies with which the operation is performed. Methods changes, like technological improvements, do not create a price variance from Standard, but unless piece rates are changed to conform with the revised method, the cost reduction factor is deferred, and sometimes lost to the company as a result of time limitations imposed by Union Contracts. These methods changes are of two classes, viz, the outright change which is generally authorized by the Engineering Department, and the "creeping" change which is authorized by the shop foreman and is sometimes done by the operator himself. It is the latter type of change

which is difficult to recognize, and therefore goes unnoticed for a long period of time.

C. Non-Standard Operations:

Non-Standard Operations or extra labour operations which are performed in addition to those or in place of those prescribed by the Standards. These operations fall into two classifications: operations which are to be done or discontinued in all cases and will ultimately be incorporated into the Standards, and those which are performed intermittently as the result of some abnormal conditions.

3. As to Labour:

A. Improper reporting of work performed. This poor reporting of labour may be segregated to the following major types:

(i) Pieces. Since the employees are paid on the number of pieces completed during the work period, any error in this type of reporting gives rise to not only the overpayment of wages, but to a hidden variance in the Work In Process Inventory. This shortage is not ordinarily discovered until a physical count is taken of the Work in Process Inventory.

(ii) Product Part Number. If the improper part number is reported to timekeeping, the wrong rate will be paid the employee and will consequently affect his wages and again, the work in process inventory. This type of error will cause a variance only to the degree which the correct and incorrect piece rates differ, multiplied of course by the quantity involved.

(iii) Operation Performed. If the wrong operation is reported the variance which results will be the same as for the improper part number as discussed above in ii.

(iv) Rate Per Unit. The rate per unit is generally applied and extended by the Timekeeping Department and errors will come to light if a careful review of all labour tickets is made by the Cost Estimating Department. To review all of these rated labour tickets is, however, a most time consuming and therefore very expensive procedure. It is far more practical to spot check these rated labour tickets, or to provide tabulating systems which automatically apply labour standards and calculate variances. The latter procedure is readily accomplished through the use of master cards, and an average earnings per hour check can be provided to prevent sizeable errors from going unnoticed. For example, the

tabulating check throws out labour tickets which exceed $3.00 per hour average earnings and a manual check can be made of all data to verify its propriety.

(v) Labour Classification. The proper classification as between productive and rework labour is an extremely important factor, and is not easily identified in many instances. Because this type of poor reporting is complex, it is hereinafter discussed as a separate item.

Piece Rate Incentives and Rework

While it is not the purpose to incorporate cost reduction into this manuscript, certain considerations are given as they relate to piece rate incentives. Under most piece rate incentives, an employee is paid a Special Rate whenever he is taken from his piece rate job for the convenience of the company. This Special Rate may vary, but in many cases it is 90% of the employee's average piece work earnings for a preceding period, such as a quarter. While the use of Special Rates should be an occasional occurrence, it is often applied indiscriminately, especially during times when the labour market is as tight as it has been for the past several years. Rework stockpiles are often liquidated under Special Rate payments, and since these Special Rates are in effect a guaranteed hourly rate, the stockpile liquidates slowly and expensively. The alert cost accountant is therefore spending much of his time these days reviewing the Special Rate and other Factory Labour practices in his own company in an effort to reduce indirect costs.

With the general method of paying for Rework operations in mind, we will now analyze the Rework picture as such, and how it can be so classified into the payroll data. Rework may be classified into the following types:

A. That which is rejected at an inspection point, for which reports are maintained daily.
B. That which is rejected during the manufacturing cycle by factory supervision without being recorded for statistical purposes.
C. That which is reworked and reported for pay purposes by operators.

Whenever an inspector rejects work-in-process under a piece rate incentive system, it is very necessary that she distinguish the cause for the reject on her daily reports, and clearly indicates which rejects are the result of poor work by the employee, and which should be considered a manufacturing hazard. In order to do this, operator identification must accompany all in-process work to the point of inspection, the theory here being that the company will pay operators only for the good work performed. The control of quality is extremely important under piece work incentives to ensure proper adherence to production methods. The lot or unit of work inspected must be entered onto the inspector's report together with the following data:

1. Part number inspected.
2. Employee from whom received (preceding operation).
3. Lot, unit or production ticket number.
4. Number of pieces inspected.
5. Number of pieces accepted.
6. Causes for rejections and quantities of each type or class of

To many this may be considered a very comprehensive reporting by inspection, but in many instances, this data must be used to evaluate the productive labour of a department, or conversely, to assure the proper charge to the Rework account. Frequently, the item loses its identity as rework in the manufacturing line, especially when a series of operations must be performed between the repairing operation and the point of reinspection. For example, a plated part or component may be rejected for initial poor polish, and the plate must be stripped or brushed off. While the stripping or brushing operation could be controlled as to labour classification, the subsequent replating and rebuffing operations may easily be classified to the productive labour account. The control of the labour classification may be exercised in one of two ways; viz, one or two operators may be assigned to the stripping or repolishing operation and the subsequent labour operations adusted on the basis of quantities handled by these operators, or the inspection report itself may be used as the adjusting basis. The latter method is recommended because of its simplicity, and also, since the department is already charged with the rework labour it becomes more expedient to perform the necessary operations and recoup the productive labour.

Let us examine for a moment the importance of controlling rework as outlined above. The author has seen many instances where the manufacture of rework has been deliberate for the personal gain of unscrupulous employees. This is accomplished by performing only a portion of the operation or effort required by the established piece rate, obtaining the work after it has been rejected, and performing the balance of the operation again as productive labour for the full piece rate. In this way, twice the standard is paid for one half the effort! Thus, not only is the company paying twice as much as it should, but also, to obtain the required production we are using two productive employees instead of one!

To summarize the rework picture the following points are to be considered:

1. Rework classified as productive labour creates inventory variances under a Standard Cost system.
2. Poor operator work is not true rework, and unless controlled, will be so classified.
3. Rework requiring a number of operations to bring the item back to the point of rejection is apt to be classified as productive labour.

4. Under certain conditions it is to the advantage of the operator to perform poorly and create rework pools.

Variance Analysis

The answer to our earlier question regarding the accountants' ability to analyze variances from Standard under a piece rate incentive system is by now apparent. Labour controls which govern labour classification and general labour reporting, must be designed and installed. It is necessary to use tabulating cards, key sort cards and the like, as a means to preticket the containers carrying the work. Other ways and means of controlling and analyzing these variances are:

1. Utilization of inspection data for the purpose of adjusting the labour accounts.
2. Comparison of work handled at each operation in the manufacture of the product.
3. Constant review of labour tickets to ascertain correct reporting.
4. Analysis of average hourly earnings by operators for which a discussion follows.

The analysis of average piece work hourly earnings is prepared periodically to examine the progress of an employee and also to evaluate possible difficulties. While it is true that earnings are limited only by an operator's ability, high earnings are nevertheless investigated, but only to enure proper reporting, methods, good work, etc. The difficulty lies in trying to convince the employees of this fact!

While the dollar and cent average hourly earnings for piece work is reported in our company on a quarterly basis with comparisons of the previous three quarters, these figures are not used as such in analysis work. Rather, each employee's earnings are converted into a percentage of his piece work basing rate, a rate which varies in accordance with his labour grade. This type of analysis is explained in more detail under the analysis and Control Tools covered in a later section of this manuscript.

The basic beginning point in the analysis of high earnings is the labour ticket from which the payroll was prepared. All information appearing on this ticket is carefully checked, evaluated and analyzed to ensure proper reporting of work done, proper application of rates, proper extension, and a careful comparison to standard and time study data. If this information is correct, a study might be made of the subsequent operations through which this has progressed so as to evaluate the reported quantity upon which the rate was applied. Inspection reports are checked to determine the quality of performance, and if the discrepancy warrants it a physical inventory may be taken of that particular part to check performance and reporting.

Analysis and Control of Labour Costs

Some of the analysis and control tools which may be used to cope with the problems outlined to this point, are presented in exhibits with a few brief remarks as to their purpose:

A. Average Hourly Earning:

1. Exhibit I—Schedule of Percentages. Rather than calculate the percentage which each piece worker's hourly average earnings are of the piece work basing rate, this schedule is used from which to post the percentage figures. There are only about 50 calculations required to prepare this schedule and is far less time-consuming than calculating the percentages of each of the thousands of employees.

2. Exhibit II—Summary of Employees' Percent of Standard, By Department. This statement shows the number of employees in each department, and the percent of Standard Piece Work Basing Rate) at which they are operating. Those in both the higher and lower range of percentages are reported to departmental foreman, supplying them with all details as to employee and his work. Both extremes are reported because:

1. Those in the upper range should be investigated as to the propriety of reporting.

2. Those in lower range are not earning piece rates and therefore require make-up pay, an additional cost which is expensive non-productive cost. Probationary periods and the like are taken into consideration by the individual foreman. While the details for the upper and lower ranges are referenced to attachments on this exhibit, they are not illustrated here.

B. Count and Labour Classification:

1. Exhibit III—Operational Comparisons. This schedule is prepared from the payroll labour tickets and represents the quantities for which piece work operators have been paid. It also shows the rework done by operators for poor work in the first instance at no charge to the company, the spoiled work adjustment, and the net equivalent pieces put into the inventory of work in process. A further schedule is maintained whereby the net inventory input is compared weekly, so that the liquidation of stockpiles resulting from non-operating lines can be accounted for. The long run trend would be equal counts at each operation. If not, investigation as to labour classification and/or counts is necessary.

2. Exhibit IV—Rework Dollar Pool. Under the theory that rejects which have been accumulated at the inspection points should be reworked in lots, and the lots maintained intact until all operations have been performed to the point of re-inspection, this schedule creates a rework dollar pool. The standard or estimated cost of reworking this material is calculated and a comparison made to the actual labour tickets.

The debit differences represent only the facts that the required rework has not been done, that labour is being improperly classified or, the estimated cost is incorrect due to the use of Special Rates, Day rate and the like.

Continued on Page 150

EXHIBIT I

Schedule of Percentages
Actual Average Hourly Earnings to
Piece Work Basing Rates—By Labour Grade

Actual Average Hrly. Earnings	Labour Grade= Piece Rate Base=	1 $1.08	2 1.13	3 1.18	4 1.24	5 1.30	6 1.36	7 1.44	8 1.52	9 1.64
$1.30		120%								
1.35		125	120%							
1.40		130	124	119%						
1.45		134	128	123						
1.50		139	133	127	120%					
1.55		144	137	131	125	119%				
1.60		148	142	136	129	123				
1.65		153	146	140	133	127	121%			
1.70		157	150	144	137	131	125			
1.75		162	155	148	141	135	129	122%		
1.80		167	159	153	145	138	132	125		
1.85		171	164	157	149	142	136	128	122%	
1.90		176	168	161	153	146	140	132	125	
1.95		181	173	165	157	150	143	138	128	119%
2.00		185	177	169	161	154	147	139	132	122
2.05		190	181	174	165	158	151	142	135	125
2.10		194	186	178	169	162	154	146	138	128
2.15		199	190	182	173	165	158	149	141	131
2.20		204	195	186	177	169	162	153	145	134
2.25		208	199	191	181	173	165	156	148	137
2.30		213	204	195	186	177	169	160	151	140
2.35		218	208	199	190	181	173	163	155	143
2.40		222	212	203	194	185	176	167	158	146
2.45		227	217	208	198	188	180	170	161	149
2.50		231	221	212	202	192	184	174	164	152
2.55		236	226	216	206	196	188	177	168	155
2.60		241	230	220	210	200	191	181	171	159
2.65		245	235	225	214	204	195	184	174	162
2.70		250	239	229	218	208	199	188	178	164
2.75		255	243	233	222	211	202	191	181	168
2.80		259	248	237	226	215	206	194	184	171
2.85		264	252	242	230	219	210	198	188	174
2.90		269	257	246	234	223	213	201	191	177
2.95		273	261	250	238	227	217	205	194	180
3.00		278	265	254	242	231	221	208	197	183

EXHIBIT II

Summary of Employees' Earnings
As a Percent Actual of Piece Work Basing
Rate (Standards)—By Departments

Dept.	Percent of Standard and Number of Employees									Dept.
	Under 100%	100-125%	125-150%	150-175%	175-200%	200-225%	225-250%	Over 250%	Total Empl'es.	Average Percent
A	4	30	32	50	18	2	—	1	137	153%
B	1	19	16	20	8	1	2	—	67	152
C	9	26	19	12	6	—	—	1	73	129
D	—	15	19	3	12	—	1	—	50	136
E	7	12	22	18	5	—	—	—	64	142
F	7	6	15	21	3	1	—	—	53	149
G	—	3	21	16	1	—	—	—	41	148
H	—	9	28	22	—	1	—	—	60	142
Total	28	120	172	162	53	5	3	2	545	145%
	*					*	*	*		

*See Details Attached.

EXHIBIT III

Production Reported On

Product Y—Week 4/9/54

No.	Operation Description	Dept. No.	Pieces Paid For	No Charge Rework	Total Pieces Handled	Less: Rework	Less: Scrap	Pieces Into Standard Inventory	Notes
1	Blank	A	12,212	—	12,212	—	212	12,000	
2	Draw	A	12,608	—	12,608	—	608	12,000	
3	Anneal	A	12,000	—	12,000	—	—	12,000	
4	Spin	B	9,590	—	9,590	—	90	9,500	A
5	Stamp Design	C	8,025	—	8,025	—	25	8,000	B
6	Polish	D	11,415	300	11,715	700	15	11,000	C
7	Buff	D	11,300	200	11,500	400	—	11,100	C-D
8	Plate	E	10,050	—	10,050	550	—	9,500	E
9	Assemble	F	9,700	—	9,700	50	—	9,650	

NOTES:

A. 2,500 pcs. a Head of Spin Resulting from Absenteeism.
B. Machines Down, 1,500 pcs. a Head of Stamp Design.
C. Liquidation of Rework Pool 3,000 pcs. Extra Operators used.
D. Error by Employee in Reporting (100 pcs.)
E. Plate Dept. to Work Saturday to Handle Extra Volume (See C.).

EXHIBIT IV

Statement of Rework Dollar Poor

Department D

Part No.	Name	Lot No.	Quantity Rejected by Inspection	Reason for Rejection	Est. Cost of Rework Required	Rework Reported Per Labor Tickets	Difference	Explanation
2122	Body	44	150	Polish	19.20	19.20	—	
	Cover	260	750	Plate	82.90	21.58	61.32	Adjust
	Cover	59	325	Polish	16.25	—	16.25	Polish Free
	Handle	43	175	Scrap	—	—	—	Rebuff not Done
3097	Shell	162	1,560	Spin	31.20	25.20	6.00	Not Done
	Bottom	89	7,420	Plate	52.00	—	52.00	Not Done
	Cups	112	620	Buff	15.90	—	15.90	Not Done
4495	Base	83	1,129	Polish	219.21	252.60	(33.39)	Cr. Actual Cost Exceeds Est.

Because of space limitations, the above analysis and control type schedules are the only ones shown. Others, such as production tickets, employee work tickets, inspection data and the like more or less revolve around a particular type of problem.

While I have tried briefly to show the analysis and control of factory labour costs in the preceding pages as it pertains to the piece work incentive system, many similar problems can be readily visualized by those of you who employ other applications of wage payments. Up to this point the advantages and disadvantages of piece rate incentives has not been discussed, the system was accepted as being and the problems of such a system considered. From the problems discussed, the following disadvantage of paying piece rates can be surmized:

1. Complete control over the reporting of labour must be exercised over each employee in the plant.
2. Time study and engineering must exercise greater care in determining manufacturing methods, setting of rates, evaluation of effort, etc., lest a loose rate be set and cost reductions are not realizable.
3. The human element of clerical errors in timekeeping and payroll are to be contended with. In some cases where a timekeeper applies the wrong rates to a job for several weeks or months running, the incorrect rate becomes binding upon the company because of Union Contract limitation.
4. Inspection must assist in controlling the wages of employees by properly segregating rejects as between operator and non-operator fault. This is not always relished by these people, and often they will classify the rejects improperly, knowing that unnecessary labour costs will be incurred by the company by their acts. No one enjoys cutting a fellow worker's pay cheque —and the "company can afford it!"

A lot has been said against piece work systems, and while some feel that they are expensive to administer and control, there are certain advantages to manufacturing supervision which may or may not offset the expense of administration. But be that as it may, the analysis and control of factory labour costs, regardless of pay incentive systems, is essential to good cost accounting records and statements. We accountants can then do a much better job of factual reporting to management.

BOOKS FOR FURTHER READING

LABOUR STANDARDS AND CONTROL, D. E. Callinan, Aust. Acct., June, 1954.
HOW TO GET LABOUR COSTS FAST, M. R. Funari, Man. Methods, March, 1954.
JUST WHAT ARE LABOUR COSTS? A. N. Seares, Systems, Feb., 1951.
LABOUR COST CONTROL WITHOUT CLOCK CARDS OR INDIVIDUAL PRODUCTION TIME RECORDS, Benson and Donaldson, N.A.C.A. Bulletin, May, 1949.

Control of Costs on the Shop Floor . . .

By Alan Fogg,
A member of P.A. Management Consultants Ltd. of Toronto.

The present trend in management is to use a whole new series of tools —among them—the electronic computer, pre-determined time standards, operations research. However, as a man does not become a craftsman by merely buying the tools—but must learn the craft, so management must remember that in order to use the new tools effectively, they also must master the basic skill of management which is to control.

THE control of costs is a big subject, and no one will deny that it is important. The reason why the majority of executives are employed at all is in order to obtain control over costs: it follows that the exercise of this control is one of their main responsibilities.

There are several definitions of control in the dictionaries, so it is important to be sure what is meant in this case by the control of costs. Any plant could manufacture its products regardless of cost—what is often called "production at any cost". The responsibility of the executives is to produce not "at any cost", but at the lowest possible cost which is morally and ethically unobjectionable, and at a lower cost than their competitors! To attain this object they use control: by this is meant the establishment of planned future costs: after manufacture it means the determination of the actual costs, and the comparison of these with the planned costs: finally control implies taking the action necessary to prevent the recurrence of any deviations from the standard costs.

But it is a matter for regret that the executives' pre-occupation with costs is more often a case of wishful thinking, than one of control. This may be because of some shortcomings in the executive—it is very frequently a defect of his character which leads to this condition; but it may also be due to some shortcomings in the data with which he is supplied. As an example he might be supplied with plain historical costs, and not with control data: this is not a criticism of historical costs—rather it is that to attain control, historical costs are not in themselves sufficient data.

As an example, consider a case which is not that of a manufacturing business, nor of any business with a possible existence, but which does illustrate the meaning of *control*. This mythical business operates trucks along a highway. The factor which is to be controlled is the speed of the trucks at 50 m.p.h., but unfortunately the trucks are not fitted with speedometers. The costing department set up a control point equipped with the various necessary pieces of apparatus, and some 10 miles further along the highway they establish a second control point. Every truck is carefully clocked-on and clocked-off, its number is recorded, and so forth. Later the records are worked-up, and subse-

quently, the results are given to the general manager: this truck went at 45 m.p.h.; that truck went at 63 m.p.h.; and so forth. This is control. All that the General Manager can do is to exhort some drivers to go faster, and some to go slower, but he will be lucky if he obtains better results in future. It is important to note that there is a standard speed of 50 m.p.h., so that the report of speeds might have been supplemented by showing, for each truck, the variance of actual speed from standard speed. It is obvious that the additional data of the variances is of no assistance in attaining control.

The next development in the mythical company is to fit speedometers to all the trucks. Now the drivers have the means to know whether or not they are operating at standard speed, and it is possible for the General Manager to demand a certain accuracy of operation from the drivers, and hence he can achieve some measure of control. Finally, each truck is fitted with a recording clock type of speedometer, and from now on there is a permanent record of the behaviour of each truck, and the General Manager can exercise full control.

The example is quite clear in demonstrating the distinction between the reporting of accurate data about the speeds, and the control of those speeds. It is the same in a manufacturing business: to simple cost data must be added the data necessary for control; or better still, the cost data should be obtained and presented in such a way that it is of value for control. To attain this control, five principles must be observed.

Five Principles of Control

(1) The Time Lag

The first principle is that the time lag between the event and the report must be the minimum: a report of what happened some time ago is of little use, and a report of what is happening now is of far greater value. The ideal is a report of what will happen. This principle is absolutely clear and completely accepted in other fields, so that it is strange to find it overlooked in industry. Consider the military problem: no general worries about where the enemy were last week; he is very interested in where they are now; and above all he wants to know where they intend to be tomorrow. The same outlook is necessary in industry: if action is to be taken about excess costs then it is essential that the report should be made whilst the facts of the event are still fresh in the mind of the responsible supervisor. It is vain to expect action to be taken about an event which cannot be recalled. It is in the observation of this principle that many controls nowadays are designed to operate instantaneously. Such are difficult to devise for labour cost, but in the case of machine operations an automatic governor or control is well-known, and many industries are entering the automatic era. That then is the first principle: to keep the time lag between the event and the report really short.

(2) The Use of Standards

The second principle of control is to compare the actual results with standard ones. A good example of this is provided by the furnace in a home. Years ago the method of controlling comfort at home was crude: when Mr. Jones was cold he went and stoked the furnace—after an interval he was warm again, but in the interval he shivered. But today he establishes a standard temperature for his comfort—it might be 70° or 75° etc., and by setting the thermostat at that standard temperature he obtains control of his comfort. Whenever the thermostat records a variance of the actual temperature from standard then the furnace operates. Both of the first two principles are to be seen in this example: firstly the rapid response, and secondly the comparison of actual conditions with standard. Note that Mr. Jones may still have his original furnace; all that has been altered is the addition of a control mechanism. It would be easy if costs were as amenable to control as the room temperature is!

(3) Measurement of Standards

What about these standards? Much depends on the type of cost to be controlled, but on the shop floor, the relevant costs are those of labour, materials, and for various services. For these it is best that the standards should be measured; and that is the third principle of control—that the standards of comparison should be measured. Preferably precise and careful measurement by a Production Engineer, and above all practical measurement. The resulting standard will be like one of the following:—

i) For direct labour the standards are measured with a stopwatch, and the answer may be in Standard Minutes per article, or in Standard Hours per operation, and so on. Note that the answer is in Standard Hours and not in actual time: the actual time observed by the Engineer is modified by an assessment of the effectiveness of the operator.

ii) For indirect labour the standards will almost certainly vary with the level of the direct production: such as x hours of indirect labour to support one level of production, and y hours to support another level of production, and so on. Such indirect labour standards are determined by the Engineer from time-studies and from observations.

iii) Material standards may be measured by the Production Engineer, though in many cases a non-specialist can obtain them. The standard may be for x lb. of metal or for y screws per finished article, or for y square feet of covering, or for so many gallons of paint.

iv.) The standards for services are obtained by similar measurements, observations and time-studies. The form of the standard varies from industry to industry, but it might be x K.W.H. of electric power per 100 feet of product, or y B.T.U. per ton annealed, or z lb. of steam per gallon of processed product, etc.

It is perhaps unnecessary to describe the dangers of negotiated standards as compared with measured ones—but the dangers are so great, that there can never be too many reminders. These are standards set by bargaining, and naturally the strongest bargainer obtains the easiest standard. This defect is generally recognized as a danger with time standards for direct labour, and the foreman's brother has traditionally had an easy output task. But the danger is not always recognized in other fields such as material usage, or services, or indirect labour: in commodities such as gas, or water: yet a loose standard here will encourage inefficiency which could be many times more expensive than a similar slackening in the direct labour standards.

To avoid negotiation over standards does not imply that there should not be consultation. A man only gives his whole energies to attaining a standard in which he believes. If it is flung at him without explanation, or if he is convinced that it is unfair or unrealistic, then he will ignore it.

Another type of standard is the historical one. When measured standards are not available, then historical ones are probably the next best thing, but they have the defects that they misrepresent the achievements of the most efficient members of the organization. Consider the simple case of two departments: in the one this year's costs show a reduction of 10% on last year's; in the other the reduction is only 5%. Too often the achievement of the former department is made a matter of congratulation, whereas the truth might be that the former department was extremely inefficient last year, and is even now not so good as the second one. The inferiority of a measured standard, over any other type, is obvious.

(4) Control at the Origin—Excess Costs

That is the third principle: what of the fourth? It is that the report should be presented at the level at which the control can be exercised, so that the necessary remedial action can be taken and that the action can be initiated by the agent with the responsibility. It often happens that reports are made to a departmental head or to a senior executive, and not to the man at the origin of the excess: in the case of shop floor excesses, that is the foreman. The foreman must have the report as a tool with which to operate.

(5) Limitation of Responsibility

The fifth and final principle is that each man from whom action is expected should only be held responsible for those items of excess cost or variances for which he himself is actually responsible. This is so straightforward and simple a conception that it is surprising how often it is ignored. If the foreman, Tom Jones, is told that his labour costs are too high and that he'll have to cut them down, then the manager is expecting Tom to take action. Follow Tom out of the office and ask his opinion: in the recent control period his department has been doing

some special experimental work for the design section; the planning section has introduced a new schedule of more frequent change-overs, leading to extra non-productive work; and so on. Tom asserts that these outside influences have put up his costs, and he feels that in consequence his own efforts are obscured. Worse still he may be convinced or just assume that his own work was more than satisfactory, whereas in truth it was not. He is not satisfied, nor is he really interested in cost reduction. The correct presentation, of course, is to charge the experimental work to the design department, and the additional change-over time to planning: Tom is then held responsible only for these excesses over which he had control. Perhaps the most common offence against this simple principle is with overtime which is often set against a particular production department, although it may have been authorized at a higher level to meet a special sales request. An equitable basis of presentation is essential in order to win the cooperation of the person responsible for each aspect of the business. Under these conditions each man's interest can be fostered and stimulated; and out of his interest can be drawn executive action. It must also be added that a clearly defined organization is a pre-requisite in order to define and identify the responsibilities in advance of the control.

Control Statements

So much for the five principles of control. How is this control attained in practice? The methods are based on the use of daily and weekly control statements. The daily statements are received as detailed reports of the previous day's operations by the sectional or departmental heads. In preparing the reports for direct labour, for example, the production is evaluated into the standard time required to make it, and this is then compared with the actual time taken: the comparison of these two times is expressed as an index of performance. On the same control statement the reasons for the variations from standard time are shown. Each day the sectional head meets his various foremen and discusses with each the various excesses for which he is responsible: in a very short time after the introduction of this type of control, the character of this meeting changes, and the foreman uses it to report to the sectional head what action he has already taken to correct the excess cost. At this level the variations from the standard time are analyzed in three main categories:—

i) Time lost altogether through breakdowns etc.
ii) Time lost through ineffective methods of working such as incorrect machines, additional operations, non-productive work, etc.
iii) Variations of time due to working faster or slower than the standard speed.

Each day the plant manager receives a brief summary of the daily control statements, usually in the form of a series of performance indices for the various sections.

Each week a control statement is presented to the plant manager, and shows the cash value of all the variances during the previous week's operations: the purpose of this is both to summarize the data, and to emphasize it in the most important language—cash. A summary of the weekly statement is presented to the senior executives responsible for production.

In the case of other costs such as indirect labour, or material, a similar series of statements are used. Such statements must cover *all* the aspects of the business over which control is required: labour, material, services, or any other source of expenditure.

Integration of Costing and Control Data

It has been shown that simple historical costs do not in themselves enable control: on the other hand, to add a control staff to the already complex organization would hardly be economical. The solution to this dilemma is to present the costs in such a manner that they give control information as well as satisfying the financial requirements. The two aspects must be integrated into one procedure: the processing of shop-floor reports should be first into control statements: subsequently the control statements become the raw material for costing, which is simpler and cheaper than re-processing the shop-floor reports for cost data. By this means both control and cost-reporting can be attained: but it is fundamental that to work in this manner the control data must have a high standard of accuracy which will be acceptable in the costing department.

Such, then, is the whole control system operating on the 5 main principles. To this must be added a few related comments.

Maintenance of Control

Checking control data is essential. It is an unfortunate fact that no method of reporting is wholly proof against man's ingenuity to circumvent it. In the same way, man's determination to be free has always defied man's attempts to make a prison 100% proof against escape: and whilst using that simile, it is notable that the weakest part of a prison is often the corruptibility of the staff. It is the same with reporting in a plant. There is the well-known case of the plant manager who proudly demonstrated how the time lost through machine breakdowns was decreasing year by year. In fact the operators had found from bitter experience that there was such a "witch hunt" when they did report breakdowns, that for a quiet life they stopped reporting them. This illustrates the need for top management to check that the reporting system is operating efficiently: it also illustrates the dangers of using controls as a rod with which to chastise the staff, instead of using them as a tool in a co-operative effort of management.

There is only one way of combatting man's ingenuity, and that is with another man's ingenuity. It is like the law-breaker and the policeman. So to ensure the continued validity of control data it is ultimately

the responsibility of top management to make occasional personal checks on the data. Commonly corruption starts by standards being loosened, because of pressure from an interested party; in consequence the variances disappear, and everything looks fine. The prudent manager, therefore, occasionally compares today's standards with those of a year ago, and so on.

A frequent source of poor results is from failure to obtain control over the whole field of manufacture. Sometimes a control is established over direct labour, and shows beneficial results: but these results could be more than offset by an increase in indirect labour (this can be 50% or more of the total), which will not be revealed unless there is also a control over that. Sometimes the shift may be more subtle, as when there might be a reduction in direct labour cost in one department as a consequence of control: but there might also be a slight falling-off in the quality of the work, leading to an increase in the labour costs (or the scrap percentage) in the following department. This case could arise, for example, in the stage before the finishing operation of a manufactured article: if the pre-painting operation were skimped, then the painting itself would be made more difficult.

Control, therefore, is only fully effective when it applies to the whole of the items of cost.

The object of management is to control: to control production and to control costs. It is this act of attaining control which makes a manager out of a man. But there is no permanent gain if the control is not maintained; and the only way in which there can be this continued control is through continued motivation from the highest possible level —if the boss is not interested in costs, then no one else in the organization will be. Control, in brief, is a frame of mind which should pervade the whole organization.

BOOKS FOR FURTHER READING

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FORGING THE TOOLS OF COST CONTROL, R. C. Perry, N.A.C.A. Bulletin, January, 1955, Section 1.

THE FUNCTION OF THE COST ACCOUNTANT IN COST CONTROL, Paul Crossman, The Accounting Review, January, 1953.

HOW TECHNIQUES COMBINE FOR GOOD COST CONTROL, R. A. Powell, N.A.C.A. Bulletin, November 1952, Section 1.

Student Section . . .

This is the second of four papers presented by Students at the January 1955 meeting of the Calgary Chapter.

A STUDENT'S VIEWPOINT OF ACCOUNTING I AND ACCOUNTING II

By R. E. A. Logan

I recall quite vividly when I was making my studies how I felt the need for someone to explain to me why we were studying certain things, and I hope that this article will be of some help to other students. I now find that these studies gave me basic principles or fundamentals, and although I have seen many variations in the methods of keeping accounting records, and hundreds of types of presentations of Balance Sheets and Profit and Loss statements, they all are built upon these basic principles, except where there was motivation for the evasion of income tax.

I should like to cite you an example that happened only a few days ago. Under new regulations of the Internal Revenue Code, U.S.A., it is now permissible for oil companies to accrue certain types of costs or expenditures, one provision is for the writing off of leases which are known to be worthless but for which the title has not been formally surrendered. We were instructed to charge expenses with the value of these leases and to set up an "accrued liability" for them. Now these leases were long since paid for, and from the principles learned in this course, it seemed obvious that this was not an accrued liability but rather a reserve or provision for worthless leases. So we pointed this out to Head Office, and much to our pleasure, we were advised through the Comptroller's office, that the Internal Revenue Department had reconsidered the matter, and this item should now be presented as a reserve, and as such, should be deducted from the Asset Account for Balance Sheet presentation. I believe this will show that the principles learned in this course are universally recognized.

I should like to point out what you can look forward to in your Accounting I and II Courses. First, there will be the study of double entry accounting which is a theory of exchange of value, and necessitates the recording of both value received and the value disposed of. Thus, for each transaction, we must have two entries, one a debit and one a credit. The debits are always placed on the left side of a "T" account and the credits on the right hand side of a "T" account. It has always been a source of consolation to me to know that no matter how involved accounting can get, and believe me it does, it can always be resolved down to a debit and credit. If it is of any consolation to you, I readily admit my confusion in understanding these debits and credits when first starting my studies. I felt there was nothing so silly or incomprehensible as these debits and credits, and in order to understand them, I had to revert everything to the consideration of cash. Should any of you have this difficulty, if you try to consider everything as a cash transaction, it may be of some help. The main thing is not to despair as you will find that the whole picture will suddenly come to light.

Once we have established what we want to record, we have then to decide where to record it and what system to follow, so that there will be a chronological order with proper classification of transactions, and a method for division of labour as it becomes necessary. It is for these purposes that we have books of original entry such as the Journal, Sales Book, Purchase Book, Accounts Receivable and Accounts Payable book, and the General Ledger, to mention only a few.

When we have our subsidiary ledgers posted, we take trial balances of these to see that they agree with the control accounts, and we take a trial balance of our General Ledger as a basis for preparing the Profit and Loss statement and the Balance Sheet. Of course, to prepare our Profit and Loss statement we must know what we are trying to establish, and what accounts are to be used to arrive at this, and more important, why. The same goes for the Balance Sheet. We must realize it is to show the position of an enterprise as at a particular time. Now in this business of accounting, we must keep different types of records for different kinds of ownership, so you have accounting for proprietorship, partnerships, and limited liability companies.

I have given this sketchy outline for those who are just commencing the course, and I think it will appeal to those with a sense of adventure to see how much there is to explain in these subjects. I know that you will find both Accounting I and Accounting II extremely interesting because they are the meat of this course. If you have an opportunity to use this added knowledge in your day work it will, of course, be of great advantage to you.

When I started studying for my R.I.A. degree, the night lectures had not been instituted and I took all subjects by correspondence except for an audit of Business Management. I can say from this audit that I think lecture courses are by far the best, but I also know from experience that it can be done by correspondence. The main advantage of lectures as I see it, is that you can usually get an on the spot detailed and explicit explanation of a specific point that is bothering you.

I might mention that I studied and tried to analyze every Balance Sheet and Profit and Loss Statement I could obtain, and found this practice both interesting and helpful. They are easily obtained from brokerage houses, and other students may find this idea helpful.

In closing, I would like to add that you should very carefully consider the pointers given in the list of instructions when studying and preparing for the examinations. This information is always given out, and by following the suggestions, you will find a systematic method of being prepared. I should like to exhort each of you to continue these studies as it is my personal belief that there are unlimited opportunities in the accounting field. The present enormous expansion in the primary industries of this country will undoubtedly be followed by a mushrooming of secondary industry. The oft quoted saying is worth repeating here, that the future belongs to those who prepare for it, and here is a little poem that you may wish to remember. It is called "Luck".

The luck that I believe in
Is that which comes with work;
But no one ever finds it
Who's content to wish and shirk;
The men the world calls lucky
Will tell you, every one,
Success comes not with wishing,
But by hard work bravely done.

OBITUARY

We announce with sincere regret the death of E. C. (Ernie) Nott of Calgary, Alberta.

Mr. Nott, who was a Charter Member of the Calgary Chapter, passed away on March 21st. He was employed by the Anglo-Canadian Oil Co. Ltd. in Calgary.

The S.I.C.A. of Canada joins with the Calgary Chapter in expressing its sympathy to Mr. Nott's family in their loss.